

10-1-1944

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Recommended Citation

Hughes, H. D.; Shedd, C. K.; and Beresford, Rex (1944) "We Have Some Soft Corn," *Farm Science Reporter*: Vol. 5 : No. 4 , Article 2.
Available at: <http://lib.dr.iastate.edu/farmsciencereporter/vol5/iss4/2>

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We Have Some **SOFT CORN**



If you fill up the driveway of your crib, you'd better make pretty sure that the corn is fully mature and dry or you are likely to have some spoiled corn. Instead of the two 8-foot cribs, you have one that's 26 feet.

By H. D. HUGHES, C. K. SHEDD AND REX BERESFORD

MANY IOWA FARMS have a lot of soft corn, and most farms have corn with high moisture content to be taken care of this fall. The wet spring and the necessity of replanting many fields made this unavoidable. The problem now is how best to handle it. Soft corn need not be a total loss. A pound of dry matter from soft corn that has not spoiled or molded is about equal in feeding value to that from sound corn. But it makes better feed for cattle than hogs because hogs can't hold enough of it to do their best. The most value can be obtained from immature corn by putting it in a silo or feeding it as fodder, but whatever could be done in handling in these ways has already been done.

There is still the possibility of snapping it and making ear corn

silage out of it. Water may need to be added to insure that it is moist enough to keep. What we are chiefly concerned with now is how best to handle soft corn which must be handled in the usual way—shucked or picked from the standing stalks in the field. The same things that apply to soft corn apply to mature corn with a high moisture content, but to a somewhat less degree.

Not a New Problem

Iowa farmers have had soft corn before and have found ways of handling it. The agricultural engineers, the agronomists and the animal husbandry men of the Experiment Station here at Ames also have worked on the problem from different angles.

Many farmers who have stored

corn for years can tell when it is safe to crib, but the safest procedure is to take a representative sample to the AAA office or to the local elevator if it is equipped with one of the electric moisture testers.

In taking samples for a moisture test the best procedure is to use a screw driver to shell a couple of rows of kernels from each of 15 to 25 representative ears. Take the ears from those parts of the field where the corn is inclined to be late. When the corn in the bottomland is all right, there is no need to worry about the corn from other parts of the field.

Ear corn is not safe to go into the ordinary crib when it has over 20 percent of moisture in the grain. At this time the cob will contain from 30 to 40 percent of moisture. With narrow cribs and favorable drying conditions, corn with as much as 25 percent of grain moisture as it came out of the field has been cribbed with little spoilage. But for safety 20 percent should be the aim.

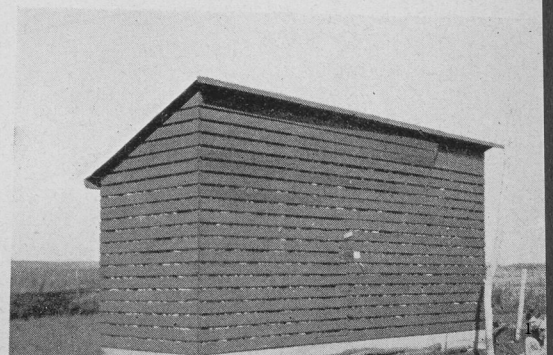
Most of us have had some first-hand experience in handling soft corn. In 1915 about two-thirds of the Iowa crop was reported as "soft" and in 1917, half the crop. The year 1924 was, if anything, worse. "Soft corn" is generally understood to mean corn which has been killed, usually by frost, before it has fully matured. When such corn is dry it is relatively light and chaffy.

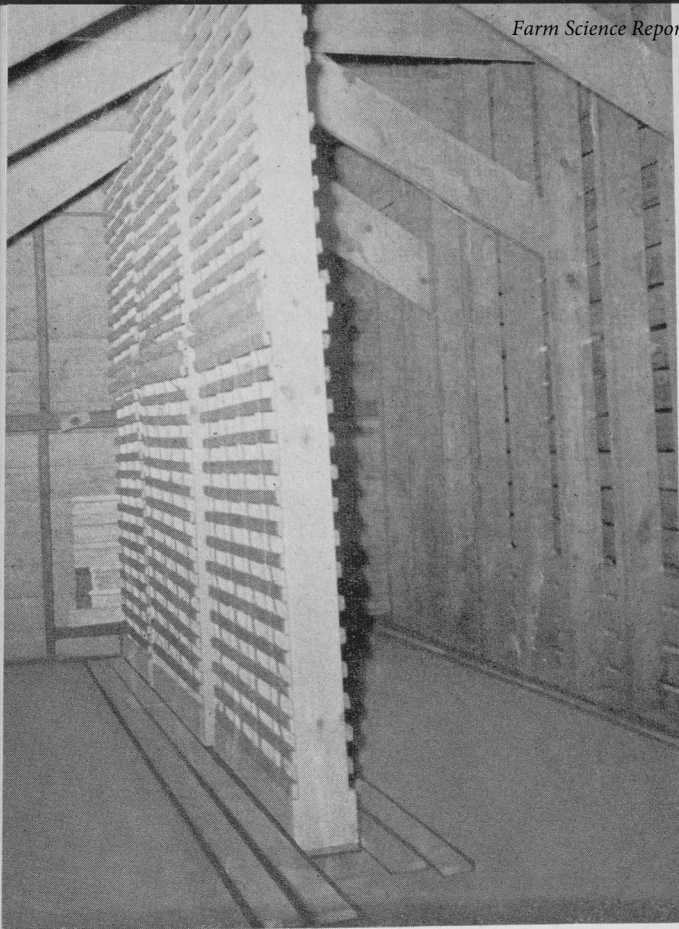
Don't Crib as Usual

Corn with high moisture content will dry faster on the stalk in the field than in the crib. Such corn should be left until the very last to harvest. Get out the more mature fields first if there is any choice.

If some cribs are narrower than

A narrow, single crib out in the open is the best for drying corn which is high in moisture content.





Removable sections of ventilator can be set in between the bracing of a crib. If they extend clear to the top of the corn they permit more airing. High moisture corn requires lots of ventilation.

others, put the soft corn in the narrowest cribs. If some cribs are better located than others to get good wind pressure, give the soft corn this advantage. Sort out the very soft ears at the elevator if you would do all you can to prevent spoilage in the crib.

See that as few husks and as little shelled corn as possible go into the crib. Put a screen on the

Need Special Ventilators

Of prime importance in handling soft corn is the use of special ventilators. A ventilator down the middle of the crib practically makes two narrow cribs out of one wide one.

The "A" type ventilator has been particularly popular throughout the Corn Belt. These venti-

lators, constructed in sections which are easy to handle in getting them in and out, provide good ventilation in that part of the crib where the corn is most likely to spoil—in the center at the bottom. The "A" type ventilators are usually made 2 to 3 feet wide at the bottom and 6 to 8 feet in height. They should be built narrow enough to go through the crib door. These are framed from 2x4's with 1-inch material for the slats. Another type of ventilator that has given good results but which is more difficult to handle is made with slats on 2x4's or 2x6's set upright down the center of the crib and extending from the floor to the top of the corn. Ventilators built with 1x6 material, spaced 14" apart and covered with picket cribbing cost somewhat less, are lighter in weight and have proved satisfactory (see illustration at left). This type of ventilator has an advantage over the "A" ventilators in cribs in which the depth of the corn is greater than can be adequately ventilated with the "A" type.

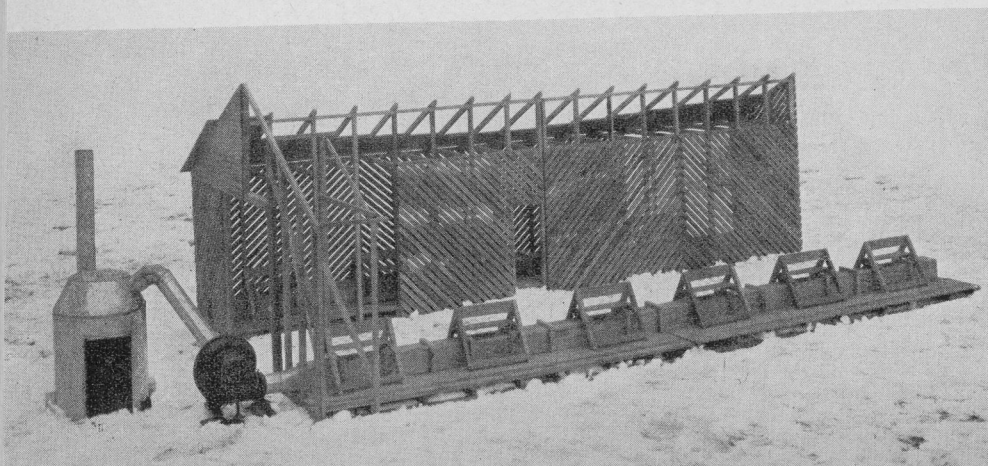
Square box ventilators placed vertically in the crib at intervals of about 4 feet also have been used. These usually are made of 1x6 lumber with cracks 2 or 3 inches wide at each corner.

Forced Air Drying

No matter how wet corn may be it can be dried by forcing heated air through it. Air at 160° F. can carry 8 times as much water as the same amount of air at 80° F., or 15 times as much as air at 60° F.

In some cases the shelling trench built into the floor of modern cribs has been used successfully. One end of the trench is stopped up securely and air blown in at the other. The air moves up through the corn from the slatted covering of the shelling trench. In cribs not provided with shelling trenches the floor has been covered with building paper to make it airtight and ventilators placed down the center the full length of the crib, through which the air is blown. In some cases "A" type ventilators have been used and in others special air ducts have been built on the floor with spaced vents.

A model crib showing arrangement of conduits and ventilators for heated air. Vents centered under each wire-covered "A" ventilator control the flow of air to different parts of the crib. Conduit is in 8-foot lengths.



Trials with Heated Air

In the fall and winter of 1917-18 cribs of soft corn were dried in the vicinity of Ames using forced ventilation with heated air, at a cost for fuel and power of from 1 to 6 cents per bushel.

In a crib 48 feet in length, 8 feet wide, and 8 feet deep, on the farm of Carl Rosenfeld, corn carrying an average of 37 percent of moisture in the grain was reduced to 18 percent at a fuel and power cost of 6 cents per bushel. Another crib in which the moisture content of the grain was over 30 percent was reduced to 13 percent at a fuel and power cost of 2 cents per bushel. The temperatures during the drying period ranged from 8 to 23 above zero. A crib was dried in February, 1918, when the temperature averaged 10 below zero, at a cost of $6\frac{1}{2}$ cents for fuel and power.

In the spring of 1918 a crib 36 feet long with corn 20 feet in depth was dried at a cost of fuel and power of 1 cent per bushel on the farm of Adam Middleton near Eagle Grove. This crib was equipped with a shelling trench in the concrete floor. Heated air was blown into this crib night and day for a week. The shelled corn from this crib was sold at a premium. The corn in the other side of this double crib, which was not dried, molded badly and was fed. A blower, such as is used on ensilage cutters or threshing machines, can be used satisfactorily though it is not as efficient as the so-called multi-vane fans, such as are used in seed corn drying plants or dwelling houses. The blower usually has been installed between the furnace and the crib.

Salting Soft Corn

The question of using salt on soft corn has had consideration and in some soft corn years in the past large amounts have been used. Tests at Ames a number of years ago indicated that the use of salt might be expected to reduce somewhat the spoilage of soft corn. About 1 pound of salt to 100 pounds of ear corn is as much as should be added to corn for feeding. It is recommended that special ventilators be used in cribs regardless of whether salt is used

or not. Salt will not make good corn out of poor corn but along with proper ventilation apparently it will tend to reduce heating and molding. The salt should be well distributed through the ear corn.

Feed Soft Corn Early

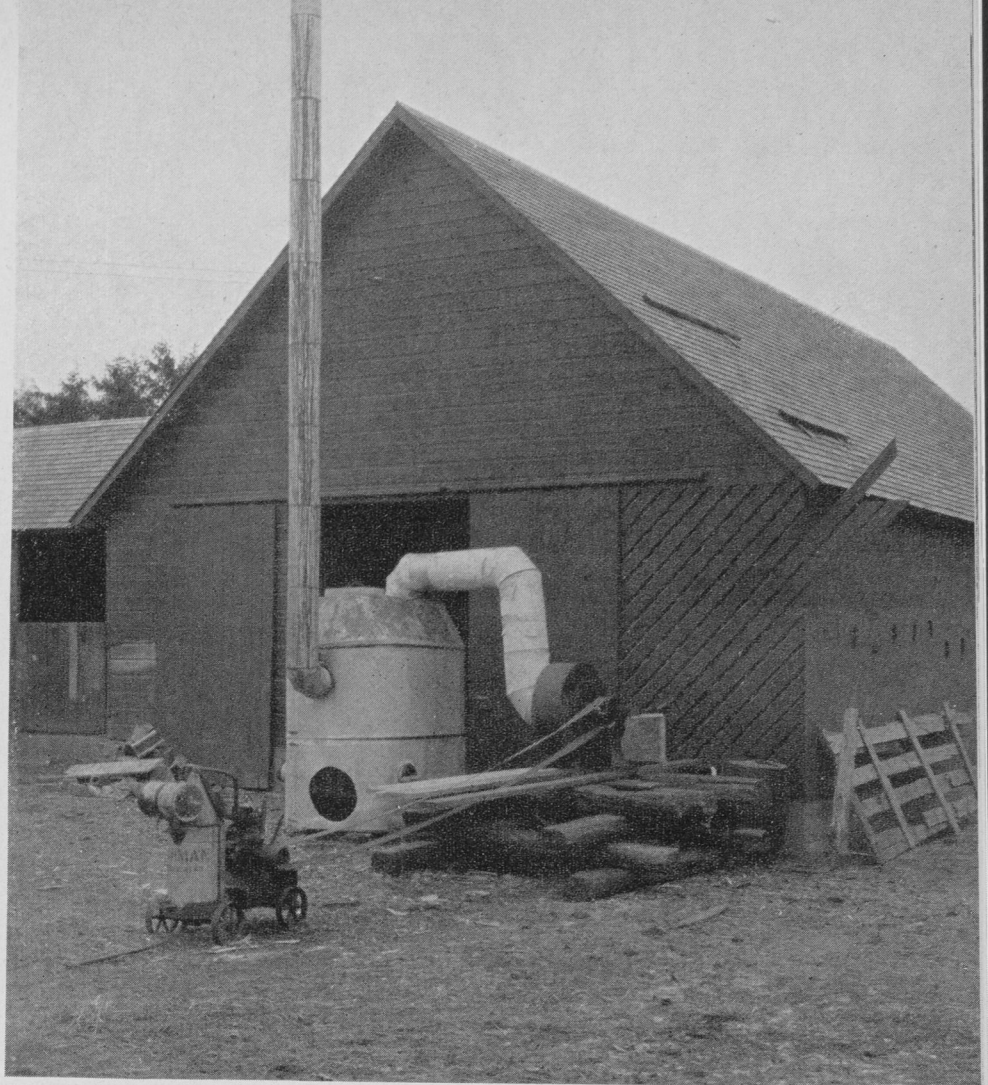
In corn which is inclined to be soft there are likely to be some ears which are very immature and may be said to be wet. The greater the extent to which such ears can be picked from the elevator as the corn is on the way to the crib, the less the danger of spoilage. Such very soft ears should be fed as promptly as possible, together with the shelled corn screened out as the corn is being elevated.

Utilizing Soft Corn

In soft corn years with corn varying considerably in moisture

the premium paid for the most mature, hard corn usually is rather large. Those who handle corn with a high moisture content must take considerable risk, and the price paid for "sample grade" corn is in proportion. When the moisture content of corn is excessively high it is well to shell in the frozen condition and get it to market before warm weather comes on. Following this procedure the loss from spoilage is likely to be kept at the minimum. Terminal elevators are equipped to dry shelled corn.

The most logical method of disposing of soft corn is in the feedlot. Probably soft corn should be fed up first while its quality is still good. It is well to leave soft corn in the field until cold weather, or to be picked as it is fed. It will keep and dry out better on the stalks than it will in any crib.



Corn in this crib was reduced from 37 percent moisture to 18 percent by the use of heated, forced air at a cost for fuel and power of 6 cents per bushel. This set-up was on the Carl Rosenfeld farm, Story County.